CLAIMS

1. A method for controlling a point-to-multipoint transmission of a message in a mobile communication system, in which method

the message is received (200, 300),

the message is stored in a buffer of the messages to be transmitted (201, 301),

the message is scheduled (302), and

the message located in the buffer is transmitted according to the predetermined scheduling (205, 305),

characterized by

determining a life time for the message, and

deleting the message from the buffer (210, 316) in response to the expiry of the life time.

2. A method as claimed in claim 1, **characterized** by

checking before transmitting the message, whether there is life time left (204), and

if there is, transmitting the message,

if there is not, deleting the message from the buffer.

3. A method as claimed in claim 2, **characterized** by

determining an acknowledgement time for the message to be transmitted as a group call,

transmitting the message to the group members (205),

waiting for the acknowledgements of the group members during the acknowledgement time (207),

checking after the expiry of the acknowledgement time, whether a predetermined part of the group members has acknowledged the message (208), and

if it has, deleting the message from the buffer (210),

if it has not, transmitting the message located in the buffer to the group members from whom an acknowledgement has not been received.

4. A method as claimed in claim 1, ~~2 or 3~~, **characterized** by

receiving the message to be transmitted from another network element (200),

making a report on the successful transmission of the message (211) in response to deleting the message from the buffer, and

transmitting the report to said another network element (212).

5. A method as claimed in claim 1, **characterized** by

receiving the message to be transmitted as a group call in the first network element (300),

storing the message in the buffer of the first network element (301),

transmitting the message to the second network element (305),

transmitting the message from the second network element to the group members (205),

waiting for the acknowledgements of the group members in the second network element during the acknowledgement time (207) after the transmission,

making a report on the acknowledgements in the second network element (211) after the expiry of the acknowledgement time, and

transmitting the report (212) to the first network element.

6. A method as claimed in claim 5, **characterized** by

storing the message also in the buffer of the second network element (201),

deleting the message also from the buffer of the second network element (210) in response to the expiry of the life time of the message,

checking in the second network element after the expiry of the acknowledgement time, whether a predetermined part of the group members has acknowledged the message (208), and

if it has, making a report (211) on the acknowledgements and deleting the message from the buffer of the second network element (210),

if it has not, transmitting the message located in the buffer to the mobile stations from whom an acknowledgement has not been received.

7. A method as claimed in claim 6, **characterized** by

determining the maximum number of transmissions for the message in the second network element,

calculating the number of the realized transmissions (206),

checking before transmitting the message, whether the number of the realized transmissions is the same as the maximum number (209), and

if it is, making a report on the acknowledgements and deleting the message from the buffer of the second network element,

if it is not, transmitting the message located in the buffer.

8. A method as claimed in claim 6 ~~or 7~~, **characterized** by giving a report on the acknowledgements, if the message has been deleted from the buffer of the second network element before transmitting.

9. A method as claimed in claim 5, ~~6 or 7~~, **characterized** by the report including the group members who acknowledged the message as received.

10. A method as claimed in claim 9, **characterized** by the first network element being arranged to transmit the message to the group members who did not acknowledge the group message, if these group members become reachable before the life time of the message expires.

11. A mobile communication system comprising at least one service centre (PTM-SC) to transmit a message as a point-to-multipoint transmission and at least one network element (SGSN) via which the message is transmitted to cells belonging to a destination area, **characterized** in that

the service centre (PTM-SC) is arranged to determine the remaining life time of the message and to check before transmitting the message, whether there is life time left and to transmit the message only if there is still life time left.

12. A mobile communication system as claimed in claim 11, **characterized** in that the network element (SGSN) is arranged to determine the remaining life time of the message and to check before transmitting the message, whether there is life time left and to transmit the message only if there is still life time left.

13. A mobile communication system as claimed in claim 11 ~~or 12~~, **characterized** in that the network element (SGSN) is arranged to receive acknowledgements from the group members during a certain acknowledgement time and to transmit the information on the acknowledgements in one message to the service centre.

14. A network element (SGSN, PTM-SC) of a mobile communication network which network supports the point-to-multipoint transmission of a message,

characterized in that the network element comprises

means for determining the remaining life time of a message to be transmitted point-to-multipoint, and

means for transmitting said message according to the scheduling of the message, if there is still life time left.

15. A network element as claimed in claim 14, **characterized** in that it (SGSN, PTM-SC) also comprises

means for determining the acknowledgement time for the message to be transmitted as a multipoint group call which has to be acknowledged,

means for monitoring the acknowledgements until the acknowledgement time has expired, and

means for compiling the acknowledgements as one acknowledgement report.

16. A network element as claimed in claim 14 ~~or 15~~, **characterized** in that it (SGSN, PTM-SC) comprises means for transmitting the message to be transmitted as a multipoint group call which has to be acknowledged during the life time of the message to the group members who are reachable in the destination area of the message and who have not acknowledged the message as received.

17. A network element as claimed in claim 14, ~~15 or 16~~, **characterized** in that it (SGSN, PTM-SC) comprises a processor which is arranged to carry out software routines and that said means are implemented as software routines.